

# ABSTRACT OF THE DISCLOSURE

A process for treatment of a batch with four carbon atoms that contains diene compounds and a minor portion of acetylene compounds is described. A portion of the fluid that circulates in a distillation zone that is enriched with acetylene compounds is drawn off laterally, preferably in the drainage zone, and a selective hydrogenation stage is carried out in a hydrogenation zone that is outside the distillation zone. The hydrogenation effluent that is produced is recycled in the rectification zone. A C4 fraction that comprises butadiene and that is low in acetylene compounds is recovered at the top, and a C5 fraction that is enriched with oligomers is recovered at the bottom.